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(12) AUSTRALIAN PETTY PATENT ABRIDGMENT

(19) AU

(11) AU-B-57670/86

(54) IMPROVEMENTS IN OR RELATING TO PONTOONS

(71) PACIFIC MARINA DEVELOPMENTS PTY. LTD.

(21) 57670/86 554951 (22) 21.5.86

(24) 24.11.82

(45) 21.10.86

(51)4 B63B 35/34

(62) 21680/83

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(74) CU

(56)

21680/83		B63B 35/34
52772/79		B63B 35/34
86339/75	501054	B63B 35/34

(57) Claim 1. A pontoon having a plurality of float elements wherein each float element has a casing formed from concrete or other suitable rigid material and a core formed from polystyrene or other suitable floatable material wherein said casing only partially surrounds said core leaving at least an exposed top surface portion thereof surrounded by a top surround of rigid materials;

a frame attached to and supported by said plurality of float elements, decking attached to and supported by said frame; and

attachment means between the top surround of rigid material and said frame.

Form 2

Sub-regulation 9 (2)

AUSTRALIA

Patents Act 1952 - 1979

APPLICATION FOR A PETTY PATENT

I/WE, PACIFIC MARINA DEVELOPMENTS PTY. LTD. a company incorporated under the laws of the State of Queensland

OF, 7th Floor, 445 Upper Edward Street, Brisbane, Queensland, 4000

hereby apply for the grant of a Petty Patent for an invention entitled:-

IMPROVEMENTS IN OR RELATING TO PONTOONS

which is described in the accompanying petty patent specification.

For an application made by virtue of Section 51 -

Original application No. 21680/83 by Pacific Marina Developments Pty. Ltd.

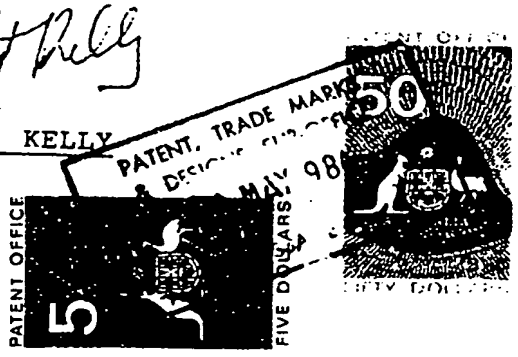
MY/OUR, address for service is:-

CULLEN HALFORD & MAXWELL
6th Floor
Medibank Building
82 Ann Street
BRISBANE QLD 4000

DATED THIS Twentyfirst DAY OF May 1986.

By Patent Attorneys
CULLEN HALFORD & MAXWELL

R.T. KELLY



TO: THE COMMISSIONER OF PATENTS
WODEN ACT 2606

COMMONWEALTH OF AUSTRALIA
THE PATENTS ACT 1952

DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT

In support of the Application made for a patent for an invention entitled: IMPROVEMENTS IN OR RELATING TC PONTOONS

Insert Title of Invention

Insert Full Name(s) and Address(es)

I~~/We~~ ROBERT JAMES McKAY

of 2971 Moggill Road, Pullenvale, Qld. 4069

do solemnly and sincerely declare as follows:—

Insert Full Name(s) of applicant(s)

1. ~~I am/We are the applicant(s) for the patent~~ –

(or, in the case of an application by a body corporate)

1. I am/We ~~are~~ authorised by . PACIFIC MARINA DEVELOPMENTS PTY. LTD.

the applicant(s) for the patent to make this declaration on its/their behalf.

~~2. I am/We are the actual inventor(s) of the invention referred to in the basic application(s)~~

(or, where a person other than the inventor is the applicant)

Full Name(s) and Address(es) of Inventor(s)

2. KEITH JOHN LAWRIE of Unit 7, Amelia Place, Carinya Street, Bundilla, Mooloolaba, Qld. 4557

State how Applicant(s) derive title from inventor(s) e.g. The Applicant(s) is/are the assignee(s) of the invention from the inventor(s)

is/~~are~~ the actual inventor(s) of the invention and the facts upon which the applicant(s) is/~~are~~ entitled to make the application are as follows:–

the applicant is the assignee of Monier Limited who in turn is the assignee of the said invention from the said inventor.

*Note: Paragraphs 3 and 4 need only be completed for a Convention Application

Basic Country(ies)
Priority Date(s)
Basic Applicant(s)

3. ~~The basic application(s) as defined by Section 141 of the Act was/were made~~

in ..... on .....
by .....
in ..... on .....
by .....

~~The basic application(s) referred to in paragraph 2 of this Declaration was/were the first application(s) made in a Convention country in respect of the invention(s) the subject of the application.~~

Declared at Brisbane this TWENTY SECOND day of MAY 19 86

To: The Commissioner of Patents

.....
Signature of Declarant(s)

CULLEN HALFORD & MAXWELL

554951

This document contains the amendments made under Section 49.

and is correct for printing.

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COMMONWEALTH OF AUSTRALIA
The Patents Act 1952-1969

Name of Applicant: PACIFIC MARINA DEVELOPMENTS PTY. LTD.

Address of Applicant: 7th Floor, 445 Upper Edward Street, Brisbane, Queensland, 4000.

Actual Inventor(s): KEITH JOHN LAWRIE

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Queensland, Australia.

PETTY PATENT SPECIFICATION FOR THE INVENTION ENTITLED:

IMPROVEMENTS IN OR RELATING TO PONTOONS

The following statement is a full description of the invention including the best method of performing it known to us:

THIS INVENTION relates to an improved pontoon or marina suitable for the mooring of boats.

Pontoons are floating dock systems usually comprising one or more walkways supported by floats. A conventional pontoon comprises a plurality of floats which may be formed from polyethylene or polystyrene. Attached to the floats may be framing members formed from concrete, steel or timber and attached to the framing members are usually decking normally formed from slats or sheeting which forms the walkways. Conventional pontoons also may include peripheral reinforcing members or walers usually formed from timber.

In relation to such conventional pontoons as described above the floats when formed from polystyrene usually had a concrete casing which entirely surrounded the polystyrene core. Such floats however were found to be undesirably heavy and therefore less bouyant than desired. Floats formed entirely from polystyrene without the concrete surround were found to be rather unstable because of their light weight. In relation to floats formed entirely from polyethylene usually such floats were also found to be unstable because of their light weight.

Also in cases where floats were used having a polystyrene core and concrete surround such floats were usually integral with the pontoon structure. In the case where floats were formed entirely of polystyrene or polyethylene usually these were bolted or strapped to the pontoon structure. Such pontoon structures were normally

not readily transportable to the pontoon site and were often nonversatile in nature depending upon differing requirements dictated by the pontoon site or owner.

It is therefore an object of the invention to provide a pontoon which alleviates the abovementioned disadvantages.

The pontoon of the invention comprises a plurality of float elements wherein each float element has a casing formed from concrete or other suitable rigid material and a core formed from polystyrene or other suitable floatable material wherein said casing only partially surrounds said core leaving at least an exposed top surface portion thereof surrounded by a top surround of rigid material; a frame attached to and supported by said plurality of float elements, decking attached to and supported by said frame; and attachment means between the top surround of rigid material and said frame.

The invention also provides a float element for use in a pontoon comprising a core formed from polystyrene or other suitable floatable material and a core formed from concrete or other rigid material wherein there is provided an exposed top surface having a surround formed from said rigid material.

Preferably the float element is of a modular nature and is rectangular in cross section and includes a casing comprising a base wall, two pairs of opposed side walls and a top flange all formed from concrete or other settable

material such as fibreglass surrounding a polystyrene core which may also be formed from other light or floatable material. The top surface of the core may thus be exposed.

The core may also be formed from polyesterene, polyethylene or polyurethane.

However the casing may have any other suitable shape such as cylindrical or hexagonal. However in accordance with the invention at least part and more suitably substantially all of the top surface of the core is exposed and is surrounded by a flange or peripheral top surface of the casing.

The float as described above may be formed by an appropriate moulding process. In one form a mould may comprise an open box in which polystyrene precut to shape may be inserted. The polystyrene core is suitably spaced from the wall of the mould and concrete poured in from the open top and allowed to set. The mould may then be inverted to facilitate withdrawal of the float element or alternatively the float element withdrawn from the mould through the open top thereof. The mould may have tapered side walls to facilitate withdrawal of the core element.

The float element may also include a plurality of ferrules or sockets located in the abovementioned top flange or top surface thereof. Suitably a ferrule formed preferably from nylon or other plastics material is located in at spaced intervals in the top flange of the casing.

Suitably the frame includes a plurality of longitudinal members and one or more cross members and is modular in nature. Optionally an individual module may have decking attached thereto. Adjacent modular frame components

The core may also be formed from polyesterene, polyethylene or polyurethane.

However the casing may have any other suitable shape such as cylindrical or hexagonal. However in accordance with the invention at least part and more suitably substantially all of the top surface of the core is exposed and is surrounded by a flange or peripheral top surface of the casing.

The float as described above may be formed by an appropriate moulding process. In one form a mould may comprise an open box in which polystyrene precut to shape may be inserted. The polystyrene core is suitably spaced from the wall of the mould and concrete poured in from the open top and allowed to set. The mould may then be inverted to facilitate withdrawal of the float element or alternatively the float element withdrawn from the mould through the open top thereof. The mould may have tapered side walls to facilitate withdrawal of the core element.

The float element may also include a plurality of ferrules or sockets located in the abovementioned top flange or top surface thereof. Suitably a ferrule formed preferably from nylon or other plastics material is located in at spaced intervals in the top flange of the casing.

Suitably the frame includes a plurality of longitudinal members and one or more cross members and is modular in nature. Optionally an individual module may have decking attached thereto. Adjacent modular frame components

may be attached to each other by suitable means such as fishplates interconnecting adjoining longitudinal members.

The cross members of each frame module may include preformed holes or sockets for the insertion therethrough of bolts which may extend into an associated ferrule of an adjacent float element.

The ferrules which suitably are tubular or part tubular in nature having a self tapping, tapped or threaded internal surface may have a pair of aligned apertures in the side wall thereof to allow passage therethrough of a concrete reinforcing member such as an iron rod. Normally the concrete casing for the float will be formed from un-reinforced concrete except for a rectangular reinforcement frame located in the top surface of the casing or alternatively a plurality of reinforcement rods of retaining an associated ferrule.

The decking may be manufactured from slats, panels or sheeting formed from metal or timber, such as plywood or fibrous sheet.

Reference may now be made to a preferred embodiment of the invention shown in the attached drawings wherein:

FIG 1 is a perspective view of a modular float element constructed in accordance with the invention;

FIG 2 is a sectional view of the float element shown in FIG 1;

FIG 3 is a top plan view of the float element shown in FIG 1 partly broken away;

FIG 4 is a perspective view of a pontoon constructed in accordance with the invention;

FIG 5 is a perspective view of a ferrule mounted or supported by a reinforcing rod located in the top surface of the concrete casing of the float element shown in FIG 1;

FIG 6 is a section view of the ferrule shown in FIG 5;

FIG 7 is a perspective view of the pontoon of FIG 4 with the decking removed for clarity; and

FIG 8 is a view of a suitable mould for making the float element of FIG 1; and

FIG 9 is an exploded perspective view of a second type of pontoon constructed in accordance with the invention.

In the drawings there is shown float element 10 having polystyrene core 11 and concrete casing 12 and top surface 12A of casing 12 surrounding an exposed top surface of core 11 as shown. There is also shown socket members or ferrules 13 supported in reinforcing rods 14 as shown in FIG 3. Ferrules 13 have a threaded internal surface 15 and a pair of aligned apertures 16 for the insertion of reinforcement rods 17.

Pontoon 18 shown in FIG 4 includes walkway 19 supported by a pair of adjacent float elements 10 at spaced intervals and an outwardly projecting finger 21 supported only by single float elements 10 at spaced intervals. There is also shown angle members 20 interconnecting finger 21 to walkway 19.

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There is also shown framing members comprising longitudinal members 22 and cross members 23 having bolt holes 24 aligned with ferrules 13 of float element 10 as shown in FIG 7. There is also shown reinforcement rails or waler 25 and decking slats 26. Fishplates 27 interconnect adjacent framing modules formed from members 22 and 23. If desired the decking slats 26 may also form part of an individual module.

In FIG 8 there is shown a mould 28 having a base wall 29 and side wall 29A for the manufacture of float element 10. Side wall 29A may be tapered if desired as shown in dotted lines to facilitate withdrawal of float element 10.

In FIG 9 there is shown float elements comprising a tub or casing 30 having a peripheral top edge 31 and a core 32 of flotable material such as polyethylene, polyurethane or polystyrene. Tub 30 may be formed from concrete or fibreglass. Attached to tubs 30 are frame 33 comprising longitudinal frame members 34 and outer frame members 35. Also shown are transverse frame members 36. Also shown is decking 33A. Adjacent modules formed by frame members 34, 35 and 36 may be connected together by fishplates 37. Attachment bolts (not shown) may be used to attach frame 33 to sockets 38 located in edge 31.

It will be found that pontoons constructed in accordance with the invention will be relatively inexpensive and durable, and thus offer cost advantages compared to the

prior art. The modular nature of the framing elements enhances the cost advantages of the present invention.

The invention also includes within its scope a method of construction of a pontoon including the following steps:

1. forming a plurality of float elements preferably as described hereinbefore.
2. attaching framing members preferably in the form of modules to a plurality of float elements suitably as described previously; and
3. attaching walkway means such as decking to the framing members.

A further advantage of the present invention is that varying pontoons may be constructed from the modular floats and/or modular framing members having varying performances under load which may be made suitable for different locations or differing requirements of the user.

Also pontoon of the invention may be installed by using modular framing members suitably having a top walkway surface of decking attached thereto for the purpose of stability. These may be present outwardly projecting ends of the longitudinal members which may be attached to adjacent outwardly extending longitudinal members of an adjoining module by suitable connection means as described previously. The floats may be suitably attached to an individual framing module before attachment of the framing module to an adjoining framing module.

The claim defining the invention is as follows:

1. A pontoon having a plurality of float elements wherein each float element has a casing formed from concrete or other suitable rigid material and a core formed from polystyrene or other suitable floatable material wherein said casing only partially surrounds said core leaving at least an exposed top surface portion thereof surrounded by a top surround of rigid materials;

a frame attached to and supported by said plurality of float elements, decking attached to and supported by said frame; and

attachment means between the top surround of rigid material and said frame.

DATED this Twentyfourth day of September, 1986.

PACIFIC MARINA DEVELOPMENTS PTY. LTD.
by their Patent Attorneys
CULLEN HALFORD & MAXWELL.

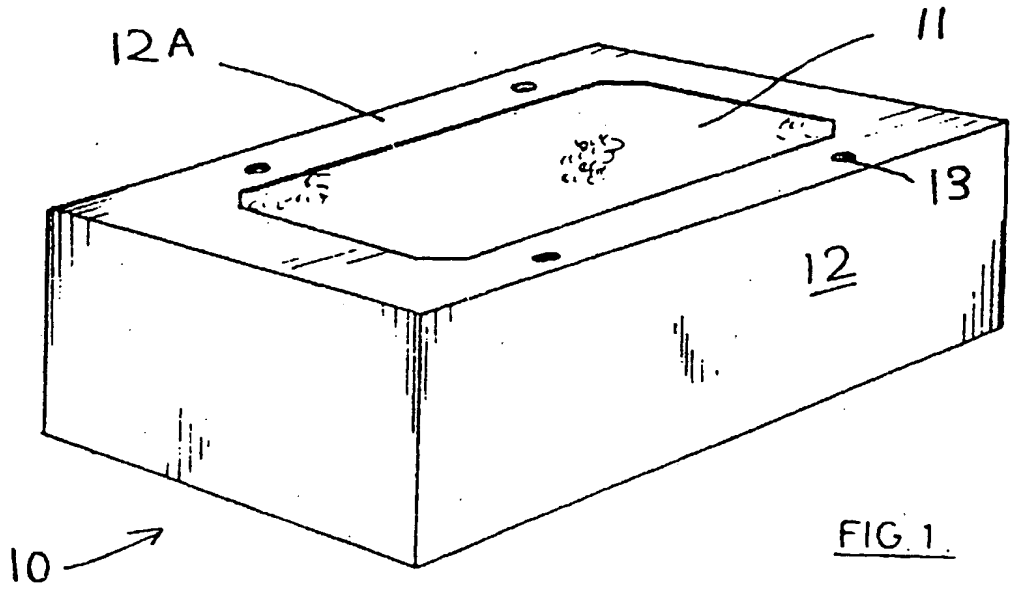

FIG. 1.

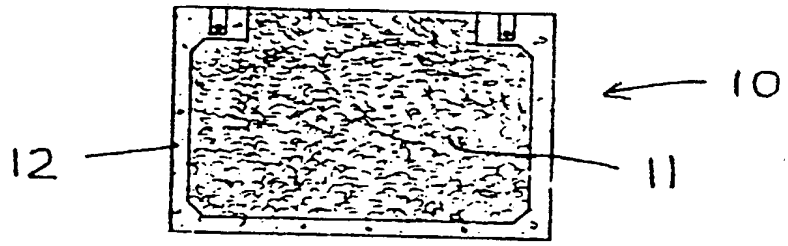

FIG. 2.

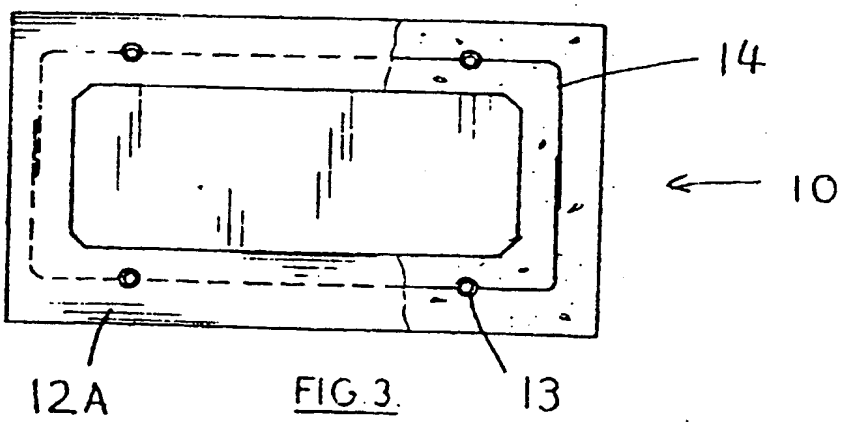

FIG. 3.

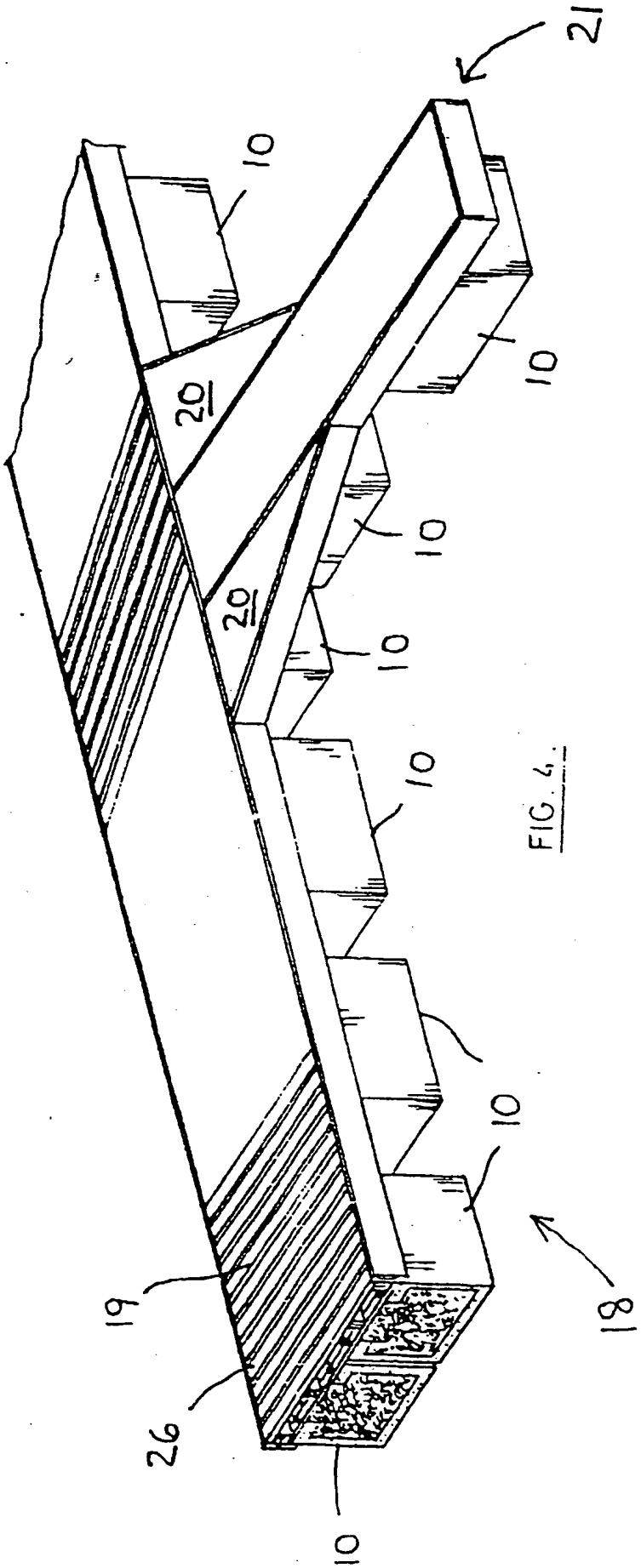

FIG. 4.

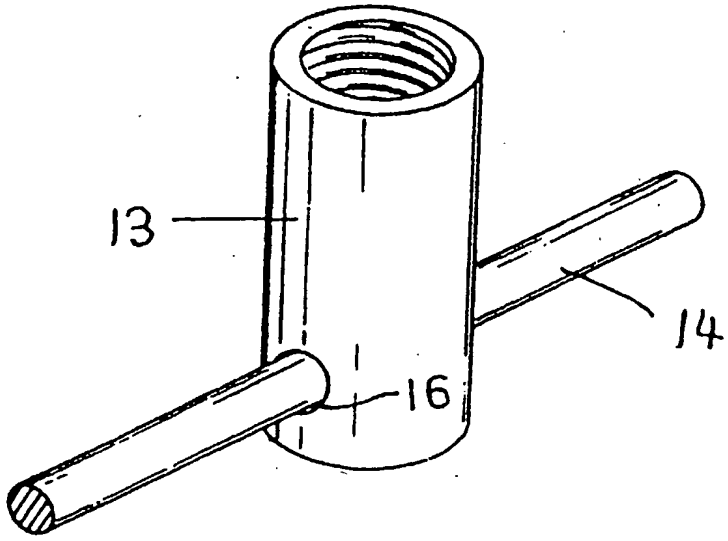

FIG. 5.

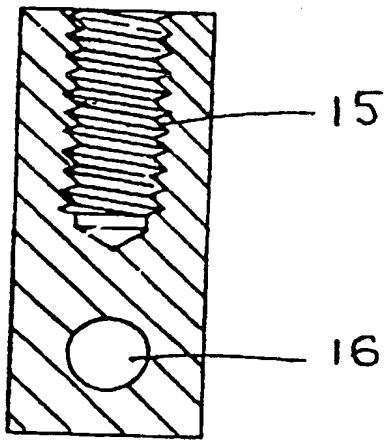

FIG. 6.

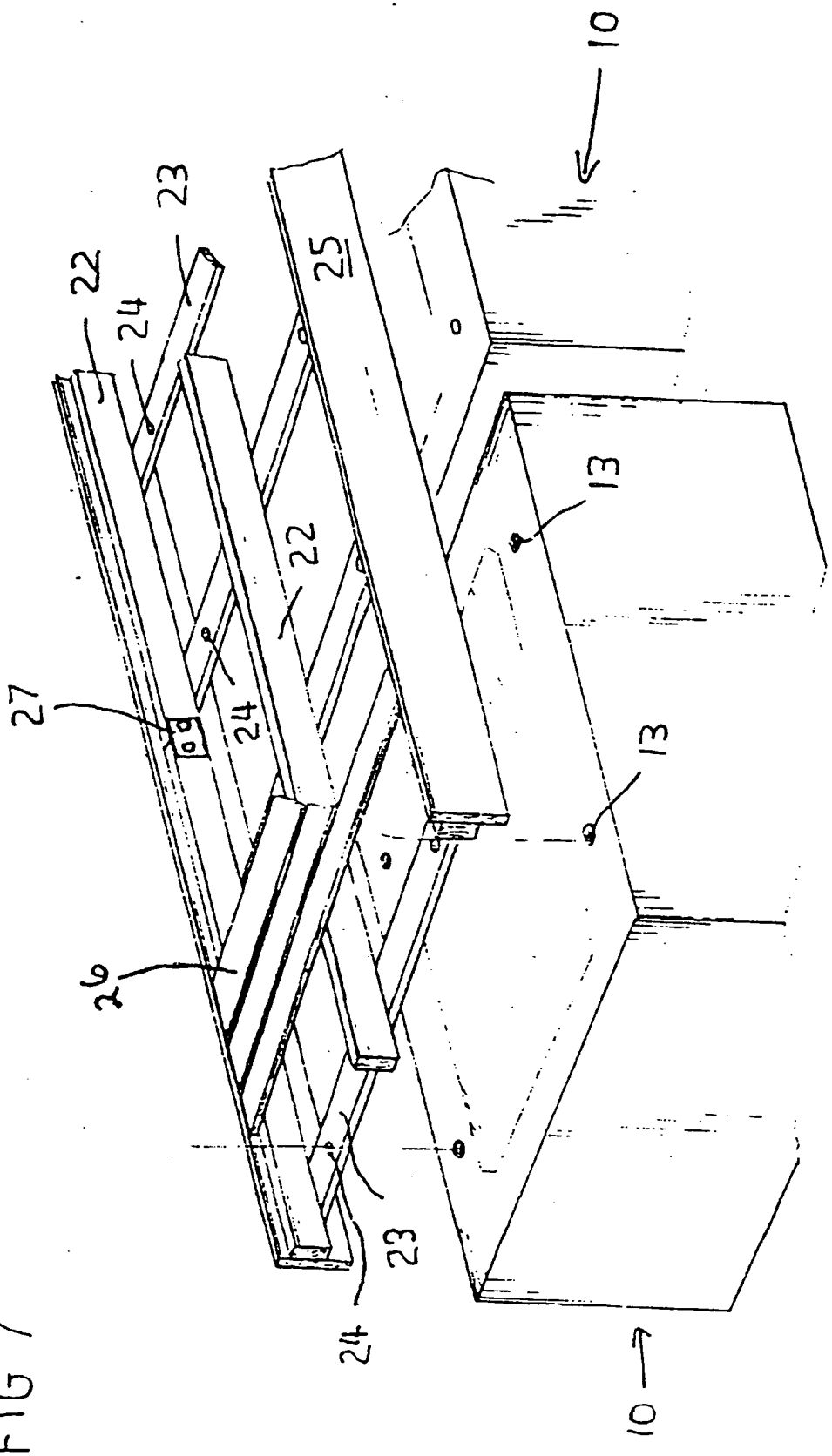

FIG 7

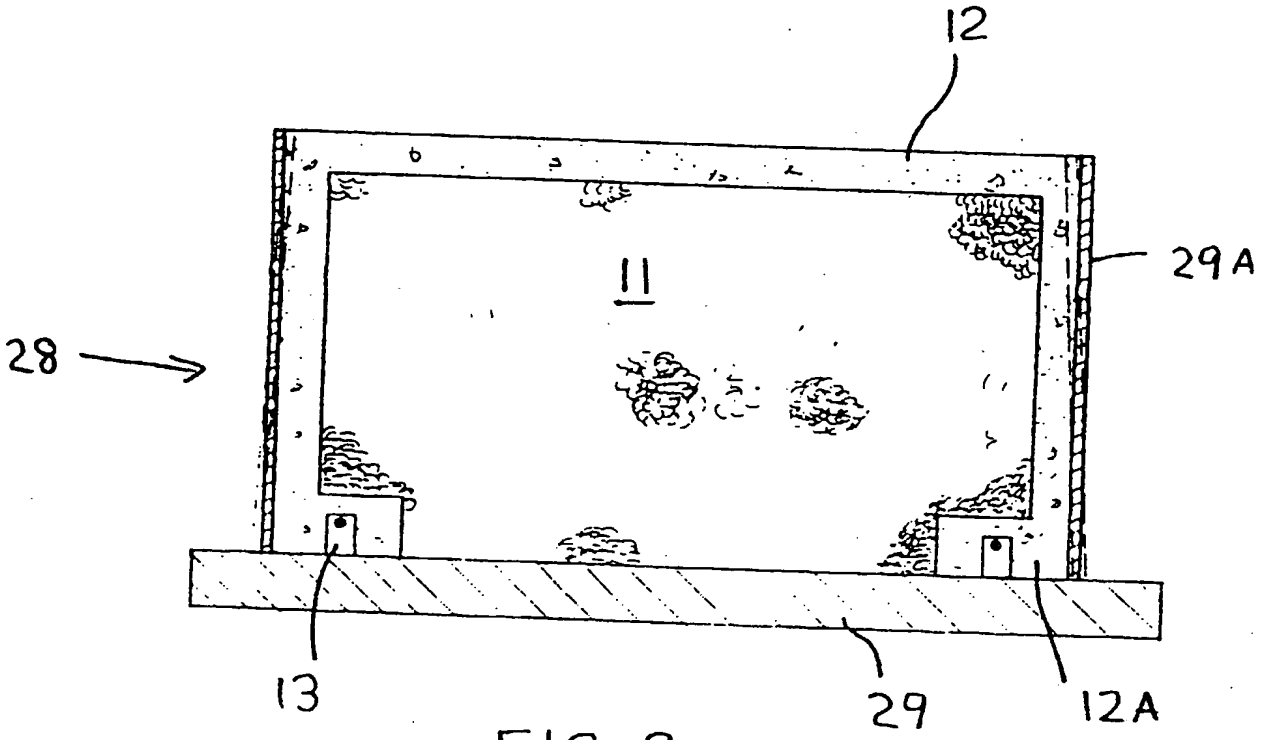

FIG 8

FIG 9